SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Shaft wall system.

E. Acoustic insulation.

F. Gypsum sheathing.

G. Cementitious backing board.

H. Gypsum wallboard.

I. Joint treatment and accessories.

J. Water-resistive barrier over exterior wall sheathing.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing.

B. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.

C. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

D. Section 07 21 00 - Thermal Insulation: Acoustic insulation.

E. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.

F. Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire rated walls.

G. Section 07 90 05 - Joint Sealers: Acoustic sealant.

H. Section 09 30 00 - Tiling: Tile backing board.

1.03 REFERENCE STANDARDS

A. ASTM C 475/C 475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).

B. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members; 2007.

C. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2006.

D. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2007.

E. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board; 2007.

F. ASTM C 954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2007.

G. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.

H. ASTM C 1177/C 1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2006.

I. ASTM C 1278/C 1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2007a.

J. ASTM C 1280 - Standard Specification for Application of Gypsum Sheathing; 2007.

K. ASTM C 1396/C 1396M - Standard Specification for Gypsum Board; 2006a.

L. ASTM C 1658/C 1658M - Standard Specification for Glass Mat Gypsum Panels; 2006.

M. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2000 (Reapproved 2005).

N. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 2005.

O. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2004.

P. ASTM E 413 - Classification for Rating Sound Insulation; 2004.

Q. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2007.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

C. Test Reports: For all stud framing products that do not comply with ASTM C 645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 3 years of documented experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C 840 and GA-216.

B. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:

1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

C. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
1. Clark Western Building Systems: www.clarkwestern.com.
2. Dietrich Metal Framing: www.dietrichindustries.com.
3. Marino\Ware: www.marinoware.com.
4. The Steel Network, Inc: www.SteelNetwork.com.
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
1. Exception: The minimum metal thickness and section properties requirements of ASTM C 645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
2. Studs: "C" shaped with flat or formed webs with knurled faces.
3. Runners: U shaped, sized to match studs.
4. Ceiling Channels: C shaped.
5. Furring: Hat-shaped sections, minimum depth of 7/8 inch.

C. Shaft Wall Studs and Accessories: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 and specified performance requirements.

D. Ceiling Hangers: Type and size as specified in ASTM C 754 for spacing required.

E. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and screwed to secondary deflection channel set inside but unattached to top track.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
1. American Gypsum: www.americangypsum.com.
2. CertainTeed Corporation: www.certainteed.com.
3. Georgia-Pacific Gypsum LLC: www.gp.com/gypsum.
4. Lafarge North America Inc: www.lafargenorthamerica.com.
5. National Gypsum Company: www.nationalgypsum.com.
6. PABCO Gypsum: www.pabcogypsum.com.
7. Temple-Inland Inc: www.templeinland.com.
8. USG Corporation: www.usg.com.
9. Substitutions: See Section 01 60 00 - Product Requirements.

B. Wallboard: Paper-faced gypsum wallboard as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless

otherwise indicated.
2. Glass-mat-faced gypsum panels as defined in ASTM C 1658/C 1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
3. Unfaced fiber-reinforced gypsum panels as defined in ASTM C 1278/C 1278M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
4. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.
   a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
5. Thickness:
   a. Vertical Surfaces: 5/8 inch.
   b. Ceilings: 5/8 inch.
   c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
6. Mold-Resistant Paper-Faced Products:
   a. American Gypsum; M-Bloc.
   b. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
   c. Lafarge North America Inc; Mold Defense Drywall.
   d. Lafarge North America Inc; Protecta AR 100 with Mold Defense.
   e. National Gypsum Company; Gold Bond Brand XP Gypsum Board.
   f. National Gypsum Company; Gold Bond Hi-Abuse Brand XP Wallboard.
   g. Pacific Coast Building Products, Inc; PABCO Mold Curb Gypsum Wallboard.
   h. Temple-Inland Inc; ComfortGuard.
   i. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
   j. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels AR.
   k. Substitutions: See Section 01 60 00 - Product Requirements.
7. Glass-Mat-Faced Products:
   a. Georgia-Pacific Gypsum LLC; DensArmor Plus.
   b. Substitutions: See Section 01 60 00 - Product Requirements.
8. Unfaced Products:
   a. USG Corporation; Fiberock Aqua-Tough Interior Panels.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas including toilet rooms.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.
3. Glass-Mat-Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C 1178.
   a. Standard Type: Thickness 5/8 inch.

D. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
2. Glass-Mat-Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C 1177/C 1177M.
3. Core Type: Regular and Type X, as indicated.
4. Type X Thickness: 5/8 inch.
5. Regular Board Thickness: 5/8 inch.
6. Edges: Square, for vertical application.
7. Glass-Mat-Faced Products:
   a. CertainTeed Corporation; GlasRoc Brand.

b. Georgia-Pacific Gypsum LLC; DensGlass Gold Sheathing.
c. National Gypsum Company; Gold Bond Brand e2XP Extended Exposure Sheathing.
d. Substitutions: See Section 01 60 00 - Product Requirements.

E. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
1. Paper Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C 1396/C 1396M; water-resistant faces.
2. Glass Mat Faced Type: Glass mat shaftliner gypsum panel or glass mat coreboard gypsum panel as defined in ASTM C 1658/C 1658M.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.

2.04 ACCESSORIES

A. Acoustic Insulation: ASTM C 665; preformed glass fiber, friction fit type, unfaced. Thickness: to match stud cavity depth inch.

B. Water-Resistive Barrier: No. 15 asphalt felt.

C. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions.
1. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
2. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
3. Ready-mixed vinyl-based joint compound.

D. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.

E. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C 954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
1. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.

3.03 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C 754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members at 16 inches on center.
1. Level ceiling system to a tolerance of 1/600.

C. Studs: Space studs at 16 inches on center.
   1. Extend partition framing to structure unless otherwise indicated.
   2. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.

D. Standard Wall Furring: Install at masonry walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
   1. Orientation: Horizontal.
   2. Spacing: At 16 inches on center.

E. Blocking: Install wood blocking for support of:
   1. Wall mounted cabinets.
   2. Plumbing fixtures.
   3. Toilet accessories.
   4. Wall mounted door hardware.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.05 BOARD INSTALLATION

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Exterior Sheathing: Comply with ASTM C 1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.07 JOINT TREATMENT

A. Glass Mat Faced Gypsum Board: Use fiberglass joint tape, bedded and finished with chemical hardening type joint compound.

B. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.

C. Finish gypsum board in accordance with levels defined in ASTM C 840,

as follows:
1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
2. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
3. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
4. Level 0: Temporary partitions and surfaces indicated to be finished in later stage of project.

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.08 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION